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Europe's Gas: The Pipeline and Economics

By JOSEPH BARNEA and WILLIAM EPSTEIN

There are three main sources for the supply of gas in Western Europe: local resources, including the North Sea; the Yamal pipeline from the Soviet Union; and Africa. Western Europe has considerable local gas resources, but it appears that in the near future the West Europeans will continue to develop their gas resources slowly. Large supplies, if required, will have to come from either the Soviet Union or Africa.

Nonetheless, local supplies of gas are economically more attractive than foreign sources in practically all cases. Gas produced in Western Europe could result in large royalties that would accrue to the governments, because in Europe underground resources belong to the state. The profits of local gas companies would also be subject to taxation and local supplies would provide local employment. There is one other important advantage: Local gas would have to be transported over far shorter distances than foreign gas, and it is the long-distance transportation costs that provide the crucial differential in the price of gas.

Longer Than Alaskan Line

The Yamal pipeline will have a length of 5,600 km. (1 kilometer equals about 2 miles) to the border of France and perhaps 200 km. less to West Germany's border.

This is considerably more than the proposed Alaska gas pipeline, which from Prudhoe Bay to Idaho would have a length of 4,200 km., and to Montana of 4,300 km. The Yamal pipeline is more than 1,000 km. longer and so presumably would have higher transportation costs than the Alaskan line. The cost of gas delivered to the U.S. border has been estimated in the newspapers as \$10-\$15 per 1,000 cubic feet. A detailed study has recently revealed that such high-cost gas can be neither financed nor sold in the lower 48 states, and the Alaska gas pipeline has been postponed.

It is reasonable to assume that the delivered cost of Soviet gas to West Germany or France will be at least as high as the estimated cost of the Alaska gas, if not higher. It is reasonable to conclude that the long-term commitment of Western Europe for the Soviet gas will lock in Western European consumers to very high-cost gas.

Europe's only alternative source of foreign gas is Africa. There is gas from Alge-

ro, offshore in several West African countries, such as the Ivory Coast, but the gas is capped because there is no market for it.

But a pipeline from Lagos, Nigeria, to Paris via Algeria and Spain would be 5,200 km., shorter than the Yamal line; if started from some West African countries north of Nigeria, it would be even shorter. The other African countries with growing gas supplies but no market include Egypt,

Libya, and Algeria, which is not committed in the U.S. subject to environmental restrictions.

The same situation is beginning to evolve in Western Europe and Japan; indeed shut-in gas exists in many parts of the world. Under these circumstances one must ask whether industries in Europe will be allowed to switch fuels, as is now being done in the U.S., when their governments have committed themselves to buy the large quantities of gas that would come through the Yamal pipeline.

Equal to \$60 Per Barrel

If we assume that the delivered cost of the Yamal gas in Western Europe will be \$10 per 1,000 cubic feet, this would correspond in heat value to \$60 per barrel for crude oil. It is also obvious that fuel oil, which is often sold in Europe below the price of crude, will be available at far lower prices in heat value than the Yamal gas. What will Western European governments and industry do? If the chemical industry in Europe has to pay such high prices for gas much of Europe's chemical industry will become uncompetitive.

We don't know what the price policy for natural gas will be but we know one thing for sure. Western Europe will be committed for many years to high-cost gas. The only way out will be either for the Soviet Union to subsidize the export of the gas or for the West European countries to subsidize its import. In either case, efforts to make the cost of this gas competitive could lead to difficult economic and political problems.

Mr. Barnea and Mr. Epstein are Special Fellows at the United Nations Institute for Training and Research. Mr. Barnea specializes in energy and is director of the Center for Information for Heavy Crude and Tar Sands. Mr. Epstein specializes in nuclear energy and international security.

Shut-in gas with no market exists in many parts of the world. Will Europe's industries be allowed to switch to cheaper alternative fuels, as is now done in the U.S., when their governments are committed to buy large quantities of Soviet gas?

ria, which involves far smaller distances than the Yamal line. Algeria would like to have a gas price equivalent to the cost of oil. Taking the official present price of Saudi Arabian crude, this works out at about \$5.70 per 1,000 cubic feet, a price that some West European countries, Italy, for instance, regard as too high. France has concluded an agreement to take Algerian gas at about \$5.25 per 1,000, but the price is believed to include a commitment by Algeria to use the proceeds from the sale of gas for the purchase of industrial equipment from France.

There are also increasing quantities of gas available in other African countries, and the flaring of gas is increasing. There is a growing gas glut due to a surplus in many of the producing countries, including the U.S., Canada, Mexico, Venezuela, Australia and the Middle East, in addition to Africa. A consortium formed to liquefy natural gas in Nigeria for export recently fell apart because of this growing worldwide surplus of natural gas. Gas is found

in Cameroon, Gabon, Angola and Tanzania. There is little doubt that the construction of the Yamal line will reduce the marketing of African natural gas in Western Europe, though historically the support of Africa has been considered a West European obligation, as demonstrated by the Lome agreement, whereby the European Economic Community undertook to provide financial support and cooperation to Africa and some Caribbean countries.

The process that currently is reestablishing competition among energy sources in the industrial countries means that gas has to compete with fuel oil and coal in the industrial market. In the U.S., gas companies are not willing to continue to pay the high prices—\$6 to \$8 per 1,000 cubic feet—for uncontrolled deep gas, and several companies have refused to honor existing contracts. Some plants in the U.S. that were using gas have already switched to fuel oil or coal where these are cheaper than the delivered cost of gas; this is per-